

Grade Three Mathematics

Standard – Processes or Content Strand

GLE – Grade Level Expectation

SPI – State Performance Indicator

✓ – Check for Understanding

Standard 1 – Mathematical Processes

GLE 0306.1.1 Use mathematical language, symbols, and definitions while developing mathematical reasoning.

SPI 0306.1.6 Identify and use vocabulary to describe attributes of two- and three-dimensional shapes.

GLE 0306.1.2 Apply and adapt a variety of appropriate strategies to problem solving, including estimation, and reasonableness of the solution.

✓0306.1.4 Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, and observing patterns.

✓0306.1.5 Determine when and how to break a problem into simpler parts.

✓0306.1.6 Use estimation to check answers for reasonableness, and calculators to check for accuracy.

✓0306.1.11 Develop strategies for solving problems involving addition and subtraction of measurements.

GLE 0306.1.3 Develop independent reasoning to communicate mathematical ideas and derive algorithms and/or formulas.

✓0306.1.7 Make and investigate mathematical conjectures.

✓0306.1.8 Explain and justify answers on the basis of mathematical properties, structures, and relationships.

✓0306.1.12 Analyze and evaluate the mathematical thinking and strategies of others.

GLE 0306.1.4 Move flexibly between concrete and abstract representations of mathematical ideas in order to solve problems, model mathematical ideas, and communicate solution strategies.

SPI 0306.1.4 Match the spoken, written, concrete, and pictorial representations of fractions with denominators up to ten.

SPI 0306.1.5 Represent problems mathematically using diagrams, numbers, and symbolic expressions.

GLE 0306.1.5 Use mathematical ideas and processes in different settings to formulate patterns, analyze graphs, set up and solve problems and interpret solutions.

SPI 0306.1.7 Select appropriate units and tools to solve problems involving measures.

SPI 0306.1.8 Express answers clearly in verbal, numerical, or graphical (bar and picture) form, using units when appropriate.

✓0306.1.13 Create and use representations to organize, record, and communicate mathematical ideas.

GLE 0306.1.6 Read and interpret the language of mathematics and use written/oral communication to express mathematical ideas precisely.

✓0306.1.10 Use correct, clearly written and oral mathematical language to pose questions and communicate ideas.

GLE 0306.1.7 Recognize the historical development of mathematics, mathematics in context, and the connections between mathematics and the real world.

SPI 0306.1.1 Solve problems using a calendar.

SPI 0306.1.2 Solve problems involving elapsed time.

SPI 0306.1.3 Determine the correct change from a transaction less than a dollar.

- ✓0306.1.1 Read and write time to the nearest minute.
- ✓0306.1.2 Compare and order decimal amounts in the context of money.
- ✓0306.1.3 Count the value of combinations of coins and bills up to five dollars.
- ✓0306.1.14 Use age-appropriate books, stories, and videos to convey ideas of mathematics.

GLE 0306.1.8 Use technologies/manipulatives appropriately to develop understanding of mathematical algorithms, to facilitate problem solving, and to create accurate and reliable models of mathematical concepts.

- ✓0306.1.9 Use manipulatives to demonstrate that the commutative property holds for addition but not for subtraction.

Standard 2 - Number and Operations

SPI 0306.2.9 Solve contextual problems involving the addition and subtraction (both with and without regrouping) of two- and three-digit whole numbers.

- ✓0306.2.6 Solve a variety of addition and subtraction story problems including those with irrelevant information.
- ✓0306.2.4 Use a variety of methods to perform mental computations and compare the efficiency of those methods.

GLE 0306.2.1 Understand the place value of whole numbers to ten-thousands place including expanded notation for all arithmetic operations.

SPI 0306.2.1 Read and write numbers up to 10,000 in numerals and up to 1,000 in words.

SPI 0306.2.2 Identify the place value of numbers in the ten-thousands, thousands, hundreds, tens, and ones positions.

SPI 0306.2.3 Convert between expanded and standard form with whole numbers to 10,000.

SPI 0306.2.4 Compare and order numbers up to 10,000 using the words less than, greater than, and equal to, and the symbols $<$, $>$, $=$.

- ✓0306.2.1 Represent whole numbers up to 10,000 using various models (such as base-ten blocks, number lines, place-value charts) and in standard form, written form, and expanded form.
- ✓0306.2.2 Understand and use the symbols $=$, $<$ and $>$ to signify order and comparison.
- ✓0306.2.5 Use highest order value (such as tens or hundreds digit) to make simple estimates.

GLE 0306.2.2 Develop understanding of multiplication and related division facts through multiple strategies and representations.

SPI 0306.2.5 Identify various representations of multiplication and division.

SPI 0306.2.7 Compute multiplication problems that involve multiples of ten using basic number facts.

- ✓0306.2.7 Represent multiplication using various representations such as equal-size groups, arrays, area models, and equal jumps on number lines.

GLE 0306.2.3 Relate multiplication and division as inverse operations.

SPI 0306.2.6 Recall basic multiplication facts through 10 times 10 and the related division facts.

SPI 0306.2.8 Solve problems that involve the inverse relationship between multiplication and division.

GLE 0306.2.4 Solve multiplication and division problems using various representations.

- ✓0306.2.3 Use parentheses to indicate grouping.
- ✓0306.2.4 Use a variety of methods to perform mental computations and compare the efficiency of those methods.
- ✓0306.2.8 Represent division using various representations such as successive subtraction, the number of equal jumps, partitioning, and sharing.
- ✓0306.2.9 Describe contexts for multiplication and division facts.

GLE 0306.2.5 Understand the meaning and uses of fractions.

SPI 0306.2.10 Identify equivalent fractions given by various representations.

SPI 0306.2.11 Recognize and use different interpretations of fractions.

- ✓0306.2.11 Identify fractions as parts of whole units, as parts of sets, as locations on number lines, and as division of two whole numbers.
- ✓0306.2.13 Understand that when a whole is divided into equal parts to create unit fractions, the sum of all the parts adds up to one.

GLE 0306.2.6 Use various strategies and models to compare and order fractions and identify equivalent fractions.

SPI 0306.2.12 Name fractions in various contexts that are less than, equal to, or greater than one.

SPI 0306.2.13 Recognize, compare, and order fractions (benchmark fractions, common numerators, or common denominators).

- ✓0306.2.2 Understand and use the symbols =, < and > to signify order and comparison.
- ✓0306.2.10 Understand that symbols such as $\frac{1}{2}$, $\frac{1}{3}$, and $\frac{1}{4}$ represent numbers called unit fractions.
- ✓0306.2.12 Compare fractions using drawings, concrete objects, and benchmark fractions.

GLE 0306.2.7 Add and subtract fractions with like denominators using various models.

SPI 0306.2.14 Add and subtract fractions with like denominators.

- ✓0306.2.4 Use a variety of methods to perform mental computations and compare the efficiency of those methods.

Standard 3 – Algebra

GLE 0306.3.1 Develop meaning for and apply the commutative, associative, and distributive properties using various representations.

SPI 0306.3.1 Verify a conclusion using algebraic properties.

- ✓0306.3.1 Show that addition and multiplication are commutative operations.
- ✓0306.3.2 Show that subtraction and division are not commutative operations.
- ✓0306.3.3 Use commutative, associative, and distributive properties to multiply whole numbers.
- ✓0306.3.4 Solve problems using the commutative, associative, and distributive properties.

GLE 0306.3.2 Develop understanding that a letter or a symbol can represent an unknown quantity in a simple mathematical expression/equation.

SPI 0306.3.2 Express mathematical relationships using number sentences/equations.

SPI 0306.3.3 Find the missing values in simple multiplication and division equations.

- ✓0306.3.5 Find unknowns in number sentences and problems involving addition, subtraction, multiplication, or division.

GLE 0306.3.3 Describe and analyze patterns and relationships in contexts.

- ✓0306.3.6 Analyze patterns in words, tables, and graphs to draw conclusions.
- ✓0306.3.8 Analyze patterns in quantitative change resulting from computation.

GLE 0306.3.4 Create and represent patterns using words, tables, graphs, and symbols

SPI 0306.3.4 Describe or extend (including finding missing terms) geometric and numeric patterns.

- ✓0306.3.7 Create different representations of a pattern given a verbal description.

Standard 4 – Geometry and Measurement

GLE 0306.4.1 Describe, compare, and analyze properties of polygons.

SPI 0306.4.1 Recognize polygons and be able to identify examples based on geometric definitions.

- ✓0306.4.1 Describe properties of plane figures (such as circles, triangles, squares and rectangles) and solid shapes (such as spheres, cubes and cylinders).
- ✓0306.4.2 Classify polygons according to the number of their sides and angles.
- ✓0306.4.3 Classify lines and segments as parallel, perpendicular, or intersecting.

GLE 0306.4.2 Understand and apply the concepts of congruence and symmetry.

SPI 0306.4.2 Determine if two figures are congruent based on size and shape.

SPI 0306.4.3 Identify the line of symmetry in a two-dimensional design or shape.

- ✓0306.4.4 Identify, create, and describe figures with line symmetry.

GLE 0306.4.3 Understand and use attributes of 2- and 3-dimensional figures to solve problems.

GLE 0306.4.4 Use appropriate units, strategies and tools to solve problems involving perimeter.

SPI 0306.4.4 Calculate the perimeter of shapes made from polygons.

GLE 0306.4.5 Solve measurement problems involving fractional parts of linear units and capacity units.

SPI 0306.4.5 Choose reasonable units of measure, estimate common measurements using benchmarks, and use appropriate tools to make measurements.

✓0306.4.5 Understand that all measurements require units.

✓0306.4.6 Recognize the use of fractions in liquid measures.

✓0306.4.7 Recognize the relationships among cups, pints, quarts, and gallons.

✓0306.4.8 Estimate and/or measure the capacity of a container.

✓0306.4.9 Measure weight to the nearest ounce or gram.

✓0306.4.10 Use reasonable units of length (i.e. kilometer, meter, centimeter; mile, yard, foot, inch) in estimates and measures.

✓0306.4.11 Know common equivalences for length (1 meter = 100 centimeters, 1 yard = 3 feet, 1 foot = 12 inches).

✓0306.4.12 Make and record measurements that use mixed units within the same system of measurement (such as feet and inches, meters and centimeters).

✓0306.4.13 Use common abbreviations: km, m, cm, in, ft, yd, mi.

SPI 0306.4.6 Measure length to the nearest centimeter or half inch.

SPI 0306.4.7 Solve problems requiring the addition and subtraction of lengths.

Standard 5 – Data Analysis, Statistics, and Probability

GLE 0306.5.1 Organize, display, and analyze data using various representations to solve problems.

✓0306.5.1 Collect and organize data using observations, surveys, and experiments.

✓0306.5.2 Construct a frequency table, bar graph, pictograph, or line plot of collected data.

SPI 0306.5.1 Interpret a frequency table, bar graph, pictograph, or line plot.

✓0306.5.3 Compare and interpret different representations of the same data.

✓0306.5.4 Solve problems using data from frequency tables, bar graphs, pictographs, or line plots.

SPI 0306.5.2 Solve problems in which data is represented in tables or graph.

✓0306.5.4 Solve problems using data from frequency tables, bar graphs, pictographs, or line plots.

SPI 0306.5.3 Make predictions based on various representations of data.